

TMDLs for Chlorides, Sulfates, Total Dissolved Solids (TDS), Sediment, Total Suspended Solids (TSS) and Turbidity for Selected Subsegments in the Terrebonne Basin, Louisiana

(120101, 120102, 120104, 120105, 120106, 120110, 120111, 120112, 120201)

Fact Sheet

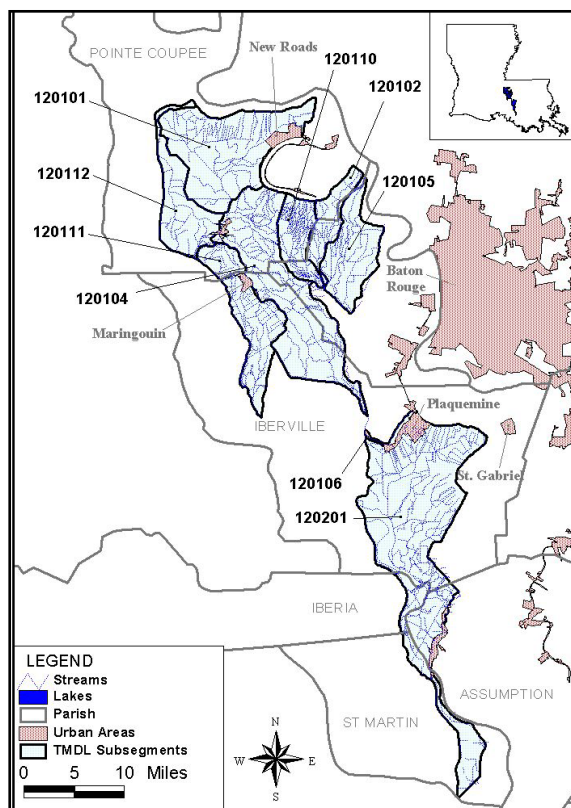


Figure 1. Location of the impaired subsegments in the Terrebonne Basin

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations require states to develop Total Maximum Daily Loads (TMDLs) for waterbodies that are not meeting water quality standards. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody and may include a future growth (FG) component.

This fact sheet presents a summary of the TMDLs that have been developed for chlorides, sulfates, TDS, sediment, TSS and turbidity for nine subsegments in the Terrebonne Basin in southeastern Louisiana (Figure 1).

Louisiana Department of Environmental Quality (LDEQ) included the nine subsegments in the Terrebonne Basin on the state's 2004 section 303(d) list for various impairments (Table 1). The impaired designated uses for the nine subsegments are primary and secondary contact recreation and fish and wildlife propagation.

Table 1. Section 303(d) listing for subsegments in the Terrebonne Basin

Subseg. number	Subseg. name	Impaired use ^a	Causes of impairment						Suspected sources of impairment
			Chloride	Sulfate	TDS	Sediment	TSS	Turbidity	
120101	Bayou Portage	PCR, SCR, FWP	X		X		X		Irrigated and nonirrigated crop production (chlor., TDS), source unknown (TSS)
120102	Bayou Poydras	PCR, FWP		X	X	X	X		Source unknown (TSS, Sed.), drainage filling, loss of wetland (Sulfates, TDS)
120104	Bayou Grosse Tete	PCR, FWP			X				Irrigated and nonirrigated crop production
120105	Chamberlin Canal	PCR, SCR, FWP				X	X		Source unknown
120106	Bayou Plaquemine	FWP						X	Source unknown
120110	Bayou Cholpe	FWP		X	X				Irrigated and nonirrigated crop production, drought-related impacts

Table 1. continued

Subseg. number	Subseg. name	Impaired use ^a	Causes of impairment						Suspected sources of impairment
			Chloride	Sulfate	TDS	Sediment	TSS	Turbidity	
120111	Bayou Maringouin	PCR, SCR, FWP			X				Irrigated and nonirrigated crop production
120112	Bayou Fardoche	PCR, SCR, FWP			X				Irrigated and nonirrigated crop production and drought-related impacts
120201	Lower Grand River and Belle River	PCR, FWP		X					Drought related, petroleum/natural gas activities

^aPCR = primary contact recreation; SCR = secondary contact recreation; FWP = fish and wildlife propagation

The numeric water quality criteria that apply to the impaired subsegments and that were used to calculate the TMDLs are presented in Table 2.

Table 2. Numeric water quality criteria for the listed subsegments

Subsegment Number	Subsegment Name	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Sediment ^a (mg/L)	TSS ^a (mg/L)	Turbidity (NTU)
120101	Bayou Portage	25		200		x	
120102	Bayou Poydras		75	500	x	x	
120104	Bayou Grosse Tete			200			
120105	Chamberlin Canal				x	x	
120106	Bayou Plaquemine						150
120110	Bayou Cholpe		25	200			
120111	Bayou Maringouin			200			
120112	Bayou Fardoche			200			
120201	Lower Grand River and Belle River		40				

^a No sediment or TSS criteria have been defined in the Louisiana Water Quality Standards. The turbidity criterion of 150 NTU was used as a surrogate for analysis.

Because turbidity cannot be expressed as a mass load, the turbidity TMDL was expressed using TSS as a surrogate. A regression between turbidity and TSS was developed for subsegment 120106 using turbidity and TSS data from that subsegment resulting in a surrogate TSS endpoint of 125 mg/L.

Because only narrative criteria are available for TSS, it was necessary to calculate a numeric endpoint for TSS to develop the TSS TMDLs. The TSS endpoint was calculated on the basis of the relationship between turbidity and TSS using the same methodology (regression analysis) used to calculate the surrogate TSS value for turbidity in subsegment 120106. The resulting surrogate endpoints were 290 mg/L, 247 mg/L and 302 mg/L for subsegments 120101, 120102 and 120105, respectively.

The TMDLs were calculated using an average load reduction approach. The approach calculated a percent reduction for each LDEQ monitoring station by using observed levels of constituents. The minimum percent reduction was calculated so that the monitoring data would meet water quality standards at that station. The percent reduction was applied to the entire subsegment. If two monitoring stations were present in a subsegment, the larger percent reduction was used to ensure that both monitoring stations will meet criteria.

In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be established and thereby provide the basis for establishing water quality-based controls. WLAs were given to permitted point source discharges. The LAs include background loadings and human-induced nonpoint sources. An explicit MOS of 10 percent and an FG component of 10 percent were included, except for turbidity, sediment, and TSS, which had an implicit MOS. Summaries of the TMDLs for each of the subsegments are presented in Tables 3 and 4.

Table 3. Summary of chloride and sulfate TMDLs, MOS, FG, WLAs and LAs for the Terrebonne Basin

Subsegment	Station	Pollutant	Percent reduction	Total allowable loading	Explicit MOS (10%)	Future growth (10%)	Σ WLA	Σ LA
				kg/day				
120101	968	Chloride	53.4	679.7	68.0	68.0	3.6	540.1
120102	969	Sulfate	82.5	417.9	41.8	41.8	0.0	334.3
120110	976	Sulfate	84.1	136.1	13.6	13.6	0.0	108.9
120201	979	Sulfate	44.4	2,485.9	248.6	248.6	105.2	1,883.5

Table 4. Summary of TDS, sediment, TSS and turbidity TMDLs, MOS, FG, WLAs, and LAs for the Terrebonne Basin

Subsegment	Station	Pollutant	Percent reduction	Total allowable loading	Explicit MOS (10%)	Future growth (10%)	Σ WLA	Σ LA
				tons/day				
120101	968	TDS	66.4	6.50	0.65	0.65	0.00	5.20
120102	969	TDS	43.7	4.04	0.40	0.40	0.00	3.23
120104	970	TDS	32.4	10.31	1.03	1.03	0.29	7.95
120110	976	TDS	55.6	2.17	0.22	0.22	0.00	1.74
120111	977	TDS	63.2	3.31	0.33	0.33	0.00	2.64
120112	978	TDS	43.8	3.37	0.34	0.34	0.00	2.69
120101	968	TSS	62.4	2.48	Implicit	0.25	0.00	2.24
120102	969	Sediment/TSS	0.0	1.21	Implicit	0.12	0.00	1.09
120105	971	Sediment/TSS	0.0	2.15	Implicit	0.22	0.00	1.94
120106	972	Turb as TSS	0.0	0.07	Implicit	0.01	0.00	0.06

For More Information

EPA seeks input on this proposed TMDL, including comments, information, and data from the general and affected public. For additional information on this TMDL project, please contact the EPA staff member listed below:

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